

Evaluation Guide

1) Choose appropriate model... (5 pts)

- ideal
- constant voltage
- constant voltage + resistor

Solve for I_d ... (3 pts)

- put diode model in circuit
- solve for I_d using Ohm's law

2) Know Zener is reversed biased

Know w/o Zener voltage is 5V (-5 across a Zener)

know that Zener clips at -3V

Know Voltage is 3V at node

$$I_S = \frac{10 - 3}{5k\Omega} \quad I_R = \frac{3}{5k\Omega} \quad \rightarrow I_Z = \frac{7}{5k} - \frac{3}{5k} = \frac{4}{5k}$$

The Zener has $\frac{4}{5k}$ A flowing \therefore regulating

OK

Other methods that are sound and arrive at same conclusion

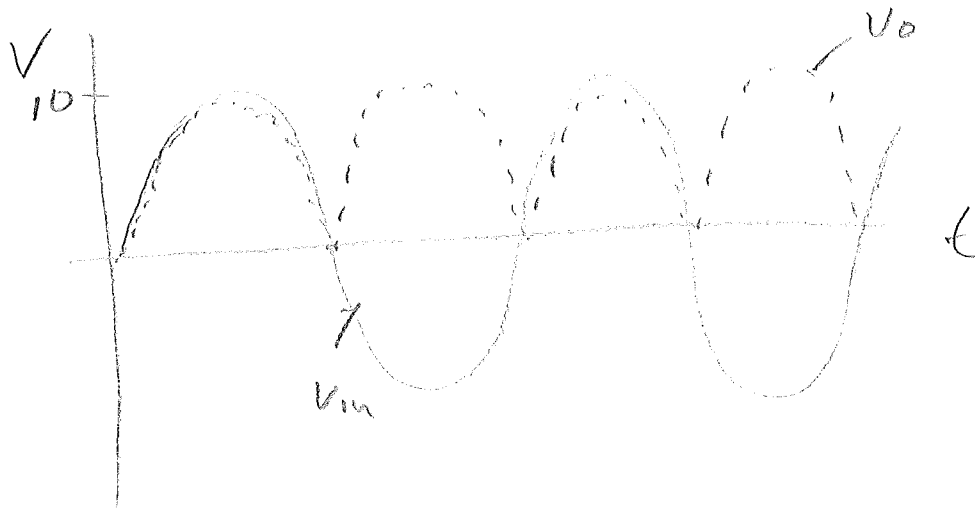
$$I_R = 2 \text{ pts}$$

$$I_S = 2 \text{ pts}$$

$$\text{Explanation} = 5 \text{ pts}$$

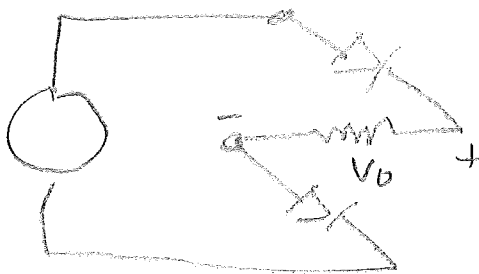
$$9 \text{ pts}$$

3)

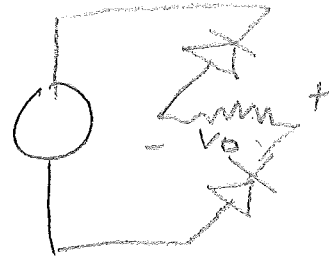


5 pts

$V_s > 0$



$V_s < 0$



5 pts